CURING DISEASE BY LIGHT.

RESULTS SO FAR OF THE USE OF THE FINSEN RAY.

Apparent Cures of Cases of Cancer and Consumption by Its Means—The Apparatus and the Mode of Treatment —X-Rays as an Auxiliary—The Outlook

Within a few years there has arisen a school of therapeutics so different from all the other forms of treatment for diseases and so simple in its operations, that it would almost seem to lie without the limits of medical science. Light is the agency of healing.

With different rays and combinations of rays it seeks to strike at the very root of disease, to destroy the deadly germs that infect the blood and to correct the abnormal cellular growths that give rise to many of the most hideous of human ills.

For a long time the results of such treatment were looked on with doubt, but now the experiments in the laboratory of Prof. Finsen of Copenhagen, Denmark; of Dr. Andrew Clark of the Middlesex Hospital, England; of Dr. Hopkins of Brooklyn; of Dr. Williams of Boston, and in hospitals in New York, St. Louis and Chicago, seem to show that the two greatest scourges of the present age, cancer and consumption, can be eradicated by the simple action of intense light, while other minor diseases succumb to it.

To Prof. Finsen belongs the credit of phototherapy. Experiments satisfied him that certain germs could not live in sunlight. He then set about devising a light of great power which could be directed upon the flesh without harm or pain.

The problem was to eliminate the great heat which accompanies powerful rays of light. After years of labor he devised a tube containing a quartz crystal lens, which decomposes an electric light of great power, diverting the heat rays to a jacket of cold water, and directing the heatless, actinic rays, blue, ultra-violet and violet, down through the tube upon the subject.

This apparatus has been mechanically improved by Dr. Hopkins, so that by means of a hanging bracket the ray may be readily directed upon any part of the body of the patient stretched on a cot beneath it.

The operating room of a photo-therapeutic laboratory is strangely unlike any other operating room in its simplicity. There is the ray-apparatus and the cot for the patient; that is all. Besides the operator, one nurse is in attendance.

Picture to yourself a huge hanging basket of ornamental iron swung from the ceiling, and incongruously sprouting on one side into a length of shiny brass telescope. This is the apparatus by which it is proposed to conquer the most dreadful of human maladies, cancer.

Inside the three-foot circle of the black iron is an electric light carbon so arranged that when the electric current is turned on, the light glows through the telescope tube. The current strength is eighty ampères, and the light produced is so dazzling that the eye cannot bear it, and the surgeon must go hooded like a falcon.

Against the wall its 22,000 candle power shows like the brightest of sunlight. This radiance poured down through the tube would quickly roast the flesh upon which it falls, were not the heat rays diverted by the quartz lens.

This lens is the difficult part of the instrument to obtain. Nothing serves the purpose so well as quartz, but a piece of quartz from which a two-and-three-quarter-inch lens can be cut, flawless and perfect, is rare and expensive.

One operator in this country applied to a number of optical firms without success, and finally went to Tiffany & Co., who placed a ton of quartz at his disposal. Out of this the largest perfect crystal he could get would cut into a lens a little less than two inches. He had finally to send to Copenhagen.

Now for the action of this surgery of light. Suppose the patient to be suffering from lupus, that cancer which destroys the face, obliterating as dreadfully as leprosy itself, every appearance of humanity.

He is laid upon a cot under the apparatus. The tube is drawn down until it stops within an inch of the ulcerated surface. There is a sizzling sound as the operator turns on the current; the sun-bright radiance glitters on the wall and pours down through the quartz lens upon the gnawing cancer, and, invisibly, the miracle is working.

For an hour the patient must lie there. The light covers a spot about an inch in diameter. When the hour is up that spot has paled a little from the angry red around it.

The next day another spot is treated, on the next still another. The treatment is daily; could be undergone half a dozen times a day if there were time, for the subject feels no sensation whatever. There is no physical or nervous strain.

Presently a strange thing is seen to have happened. About the edge, where the sore has been most malignant, sound scar tissue begins to form. The cancer is being restricted and contracted.

Now and again it makes a rally, pressing forward its angry signals, only to be beaten back by the destroying and healing ray. The end of the battle is always the same. The lupus disappears and in its place is sound scar tissue.

Not infrequently skin grafting is resorted to to restore that part of the face, provided no organs have been destroyed, to its original appearance.

In the malignant cancers sarcoma of the breast and others the roots of which lie deep the Finsen ray has done work quite as wonderful. It works slower in these cases than in lupus, where the disease is on the surface, for the rays have little penetrating power; nevertheless there are complete cures to its credit in cases beyond hope of eradication by the knife.

Before there is any apparent change in the condition, the offensive odor from the sore ceases and the disappearance of pain soon follows. Then, slowly, the healing progresses.

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At present they must be content with the knowledge that a simple ray of light has given results more wonderful than all the medicines; more radical than the knife.

It is by another form of the ray that tuberculosis is treated. To say that consumption is now being cured by a contrivance that looks like a brass mortar with a glass end may sound frivolous, but it is none the less true, it is asserted.

This piece of artillery, 18 inches in diameter and 20 inches long, is a condensing lamp, from the concave reflecting lens in the back of which is reflected an electric light of 17,000 candle power. This light is thrown upon a blue glass screen, which cuts out most of the heat rays.

Behind this screen sits the consumptive, his breast bared to the rays. A 14-inch circle of his chest is covered by the light, and he is kept there for about an hour at a time.

Like the Finsen ray, the light produces absolutely no sensation, but it has this peculiarity, lacking in the other ray, that the patient usually succumbs to drowsiness after a few moments, and falls asleep.

Its effects are almost immediate; the consumptive's temperature falls; his cough improves; his night sweats pass off; he gains weight, appetite and strength, and in the course of time the tuberculosis bacilli which have been present in great numbers in his lungs disappear.

Some very striking cases have been recorded in the medical journals. One man came for the treatment when apparently almost gone; he was utterly exhausted after walking a block. He had a temperature of 104 degrees and a racking cough, and was little more than a skeleton. Furthermore he had not the slightest faith in the treatment.

After he had taken four naps behind the blue glass screen his temperature went down to 100. In the first week he gained four pounds. In the second week he gained four more, and his cough had almost left.

A week later he was able to walk four miles without discomfort, and at the end of two months when he was discharged as cured examinations of his expectorations failed to discover any bacilli.

The theory of this light cure is more definite than in the case of the Finsen ray; consumption is known to be a germ disease, whereas cancer is still a mystery. Sunlight kills tuberculosis bacilli; and it is supposed that the rays that penetrate the blue glass screen act in the same way.

More than this, it is believed that they strengthen the phagocytes. These phagocytes are minute organisms in the blood which act as scavengers. It is their business, when any malevolent germ enters the system, to hasten to the spot and eat it.

Were it not for their ceaseless activity we should all die of consumption, as tuberculosis bacilli are present everywhere. The consumption cure ray, so the theory is, increases the phagocytic appetite to such an extent that no germs can stand before it.

In this age of swiftly-spread progress, the X-ray is already an old story. Many experimenters have tried it in many diseases with varying effect. Perhaps its most successful field is in conjunction with the Finsen ray, in cases of cancer where the centre of the trouble is internal.

The patient is put under the X-ray for fifteen minutes, and then subjected to the Finsen ray for an hour. The X-ray tends to disintegrate the tissue, and thus the Finsen ray is enabled to penetrate and extend the healing influence to the centre of inflammation.

But physicians are coming to fear this mysterious agency to which the discoverer gave the appropriate name of X, symbolizing the unknown. It passes through the skin and outer flesh only to destroy inner tissues, and often to start gangrene in the interior. So it is not now much used as a healing agency, but rather as an auxiliary.

What the future of light therapy is to be no one can say now. It is said to have mastered cancer and consumption in many cases. It has been tried with success in smallpox and scarlet fever. It is being tried in leprosy cases.

A celebrated Russian surgeon announces that he has used it with success as an anesthetic for surface operation, and to assist healing of burns, wounds and sores. But it is as a germicide that it holds out the greatest hope.

Many physicians believe that in time, when its principles of action are understood, it will be directed successfully to the destruction of all germs, and that not only tuberculosis, but pneumonia, cholera, typhoid fever, tetanus; indeed, most of the deadly ills that flesh is heir to, will disappear before it and be wiped off the list of the agents of death.

AMERICANS FORCED TO FLEE.

The Colony at Nombre de Dios Attacked by Colombian Insurgents.

COLON, Dec. 17.—Fatigued, care-worn and disgusted, there arrived at Colon yesterday the American colony of Nombre de Dios, a town about forty miles from Colon on the eastern coast, where an American enterprise, the Carribbean Manganese Company, has been doing business for some time past.

The party consisted of E. G. Williams, superintendent of the company, I. M. Hyatt, treasurer, who is also United States Vice-Consul at Colon; Frank G. Palmer, Robert Wilcox, W. Herd and Clarence de Leon, merchants, Charles Stiner, master mechanic, and Capt. W. W. Bartling of Nova Scotia.

They say that they had to flee for their lives under the following circumstances. The Liberals residing at Fato, the native town about a mile from Nombre de Dios, recently visited Nombre de Dios and demanded either money or merchandise. Their demands were refused and as their deportment became threatening, one of the merchants took passage for Colon and on his application fifty of the Government troops were sent up to Nombre de Dios.

Proceeding to Fato these troops found the Liberals strongly intrenched. An engagement took place. The Government forces captured the place with a loss of sixteen men killed and nine wounded. The Liberals lost three killed, but the number of their wounded cannot be stated, as they retired to the bush.

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The Government has promised to send a larger force to Nombre de Dios.

JUST WHAT MARCONI HAS DONE

DETAILS OF THE EXPERIMENTS IN NEWFOUNDLAND.

Much to Be Done Yet Before Wireless Telegraphy Across the Ocean Is a Commercial Success—Conditions Under Which It Succeeds—Marconi's Own Theory of the Phenomena.

ST. JOHN'S, N. F., Dec. 20.—Marconi's success in sending a wireless electric signal over the ocean came as a surprise to the people here in a measure. He came here ostensibly to select a base at some point between here and Cape Race where he could initiate experiments for picking up the Cunarders beyond the Grand Banks, about 300 miles off the coast. He brought along two assistants and two portable balloons, six kites and a variety of other apparatus.

For the past week he and his aids toiled away from daylight until dark on the bleak hilltop. People here felt that the trio were having hard luck, for they met a series of mishaps.

On Tuesday they sent up a balloon. It was 14 feet in diameter and contained 1,500 feet of hydrogen gas. Besides its guide rope it upheld an aërial wire, the fundamental feature of the Marconi system, and it was kept in position by four stays. But before these could be fitted the balloon burst its rope and wire and sailed away.

On Wednesday Marconi sent up a silk and bamboo kite 9 feet square, which he succeeded in maintaining in midair for nearly four hours. It was explained that he did this to discover the velocity of the air currents, and to determine the feasibility of balloon ascensions.

He got up the kite on Thursday for a shorter period. On Friday the breeze was too stiff to admit of anything being done and on Saturday conditions were worse and he had to abandon work. Sympathy was general for him.

But on Saturday night Mr. Marconi himself gave out a brief simple statement of his achievement. In a word Marconi announced that he had solved the problem of wireless telegraphy across the Atlantic. Then he explained the process.

This spring the company which controls his invention for business purposes built at Poldhu, in Cornwall, the largest station of his system yet in existence. It is fitted with an electrical installation operating an instrument which sends out a force equal to thirty horse power.

This great current of electric fluid is discharged into the outer air by a giant conductor composed of twenty poles, each 210 feet high, and fitted with the aërial wires indispensable for the work, interwoven so that the current is given forth as a homogeneous whole. The power of this station is one hundred times greater than that of the ordinary Marconi stations for marine news, and the place was designed especially for new experiments covering a wide range of ocean.

The establishment cost $60,000. It was partly blown down by the September gales on the British coast. It is now partly rebuilt, and before Mr. Marconi left England he prepared a plan by which the chances of trans-oceanic signalling could be elicited.

He instructed the electrician in charge of Poldhu to be prepared for the receipt of a certain cablegram from him. It would indicate that the inventor was ready with his apparatus here and that beginning the day after receiving the despatch the Poldhu man was to send for three hours daily, at five-minute intervals, signals according to the prearranged plan, the signals to be continued daily (Sundays excepted, until instructions to the contrary were received.

The day for beginning was Tuesday last, but that day the balloon blew off and nothing was accomplished. The hours were from 3 to 6 P. M., Greenwich time, corresponding here to from 11:30 A. M. to 2:30 P. M. The signals were the Morse characters, for the letter "S"—three dots, thus (...).

On Wednesday the first kite was got up and by its aid the aërial wire here was got into use. The result was that the Cornwall signals were received. They were distinctly noticeable by Mr. Marconi and his assistant, Mr. Kemp, both of whom took turns in watching for the ticks.

The better to distinguish them the two electricians had telephone attachments fixed to the receiver of the apparatus. For ordinary work a recorder is used, with a tape on which the dots and dashes of the Morse code are reproduced as quotations on a Stock Exchange ticker. The instrument is extremely sensitive, but in a case like the present, they were not to be depended upon to the extent that the human ear could be, the sensory auditory nerve giving results impossible to attain with any contrivance of an automatic character.

With the ear pieces against their ears the two watchers waited for the expected signals, and at 12:30 the first set of wave beats came, being repeated frequently for a little time. Again at 1:10 they were received, and once more were heard at 2:20. In the words of the inventor himself:

"A great number of the conventional signals which I had instructed Poldhu to send were received. They were distinct and unmistakable, and their frequency, regularity and strength convinced me that they were genuine."

On Friday they were received again at 1:30 P. M., but were not so good. This was attributed to the difficulties experienced in keeping up the kite and to the disturbances caused by the interference with the wires thereby. On Saturday a further attempt was made, but without success. Adverse weather conditions proved injurious, and three kites were broken.

Under these circumstances Mr. Marconi determined upon suspending further experiments until he was able to replace the kite with a pole, as the heavier wire he could suspend from a staff 200 feet high would give him more satisfactory and assured results than a slighter wire elevated [illegible] feet by a kite, but difficult to keep at that altitude.

Mr. Marconi himself does not pretend to have mastered the matter in its details. He willingly concedes that there is much respecting it which nobody knows or can give satisfactory explanations for. His most likely explanation of the phenomena of wireless telegraphy is that it is a sort of electric earthquake, which shakes up the natural electricity of the earth as a shock does the material electricity.

As he projects a current into the aërial wire, it affects the latent electricity in the surrounding atmosphere, agitating it and sending it radiating outward in all directions like the ripples on the surface of a pond when a stone is thrown into it. It has long been known that the atmosphere was charged with this latent electricity, but how to harness it for man's use was not realized until Marconi put his theories into practice.

The Marconi system does not admit of its being done yet to the fullest extent, but every day the store of knowledge of it is being widened and enlarged, and the most decided onward step was made by last week's experiment. To what future extent the main principles may be developed it is impossible to say at present.

Mr. Marconi gives these details as to wireless telegraphy. Fog is the ideal weather for his business. The humid atmosphere helps, he supposes. He finds that where it is possible to send 100 miles in clear weather, 110 miles is possible in fog.

To support the aërial wire the poles should be about two hundred feet high. Proximity to the sea is an advantage; why, is unknown.

He does not now signal with parabolic reflectors. With them it was only possible to signal between two positions within sight of each other, and the rays were stopped by the curvature of the earth.

His waves now radiate in all directions and are caught by the tuned instrument. They only affect a tuned radiator which is exactly in their tune. All steamers are tuned alike so that they can communicate with each other if in distress. Otherwise all stations are tuned differently.

Tuning means the frequency with which the electric shock goes up and down the aërial wire. This varies from 100,000 times a second to 1,000,000 a second.

The system is available for about two-thirds of the distance on land that it is on the ocean. High hills do not constitute an obstacle, but the ground itself acts adversely. A high pole is needed, but it is not an advantage that it be a high hill. A low-lying spit near the ocean is best.

Mr. Marconi, while well pleased with the result of his experiments, evinces no undue elation at the fact. He is satisfied that the principles underlying all of his experiments in a minor manner have proved correct in this wonderful development.

It is merely requisite that sufficient power should be generated at one of his stations and projected into space for a message to be sent in time to the uttermost ends of the earth. It was inevitable that in an experimental process such as this was with the influence of an unstable kite, air currents and the like the signals should not be of an eminently satisfactory character.

It requires months of testing before an substantial enlargement of the scope of the system is possible and it will be so in this case more than ever, but the signals were conclusive. No other agency could deliver them except the Poldhu station, and the safeguards which Mr. Marconi had provided and which cannot, for business reasons, be given in detail, were such as to make a mistake impossible.

His chief assistant, Mr. Kemp, received the signals as well as Marconi, and they both agreed as to the genuineness of the message. With his characteristic modesty, Mr. Marconi refrains from outlining the possibilities which the future has in store for this discovery, contenting himself with the statement that ere many months he would be in a position to prove beyond any question of reasonable doubt that signalling between Cornwall and St. John's was an easy matter.

Whether it is possible to utilize for commercial purposes the lesson contained in the discovery is, of course, yet undetermined, but as only three years ago the limit of successful wireless signalling was about five miles and as last week messages were being sent between ships and stations 200 miles apart and as now readable signals, under exceptional conditions, of course, have been projected 1,800 miles, it is easy to see that but a short time must make transatlantic commercial telegraphing by the Marconi system an accomplished fact.

For practical purposes Mr. Marconi finds that a wire 200 feet high elevated by a pole, balloon or other contrivance is an ideal one for his purpose. After that, all he requires is abundant power for the expelling of the electricity and diffusion of these signals.

The curvature of the earth does not injuriously affect the message. It was thought so for a considerable period, but this experiment has proved the contrary.

A more serious difficulty is the nature of the ground where the station is located. Some geoglolical formations assist the apparatus, others minimize its value. It is possible on certain spots to communicate 200 miles, on others only 100 miles.

The presence of iron formation is injurious. The topographical variations by land cause friction, which lessens its force when a large area is operated on, and this is true to a smaller extent of the ocean, but power can be provided to overcome this, and Mr. Marconi is to add extra power to his Poldhu station, so that the signals may be transmitted across here with much more pronounced effect.

His assistants will remain to receive the signals; they cannot return them as they are not equipped with heavy batteries on this side, but there will be abundant proof supplied by the success of the series of experiments which Marconi will initiate in the near future to demonstrate what it will be possible to do when a sending station is set up in this vicinity.

WHENCE THE NAME "BUGEYE"?

Discussion as to the Designation of a Type of Chesapeake Bay Craft.

From the Baltimore Sun.

In your very interesting article on "Bay Craft of Our Chesapeake" you have the following in relation to the boat commonly known as "bugeye."

"Bugeye" is a name that was coined by some one, but its exact derivation is not known. It has been said that the first bugeyes carried their sidelights in the eyes of the boat on each side of the stemhead, which gave them an appearance, when approaching, of a monster with a red and green eye. But the sailor will ask what would be the color of the lights after the bugeye took one good dive into a head sea."

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MARCONI AND HIS AMBITION.

WORK THAT FINALLY SENT A SIGNAL ACROSS THE OCEAN.

Showed Inventive Genius as a Boy—Began Sending Wireless Signals Seven Years Ago When 20—Characteristics—His Engagement to an American Girl.

Marconi, the young Italian who believes that he has sent a wireless signal across the ocean is the same Marconi who seven years ago was worrying his parents with strange ideas about sending a message through a hill on their Italian estate. At 8 years of age he had shown inventive ability; at 12 his tutor attempted to rob him of a device he had put together; at 16 he was deep in mathematical, chemical and electrical problems and his family had come to look upon the boy as an inventive genius.

But when, at the age of 20, he developed his idea of telegraphing through hills and forests and stone walls without any connecting medium whatever his friends drew the line. It was preposterous, they said.

The boy thought about the matter for a whole year—the idea of using a Bramley coherer to detect electric vibrations in the ether at a distance from their source had occurred to him in his study and reading of the work of Hertz; but, as he afterward explained, he did not make any experiments because he felt that the same idea had probably come to several others and that some one would have the whole field of wireless telegraphy developed before he, hardly more than a boy, could make a fair beginning.

So it came about that young Marconi took up the subject of wireless telegraphy against the protests of his family and friends and carried on the work for months with nothing but jeers and ridicule from the scientists and professors to encourage him. His parents watched his youthful enthusiasm grow—there was no problem too great for him—until success after success induced him to go to England.

From that time until Dec. 13, when the world was electrified by the news that he had signalled across the Atlantic Ocean, he worked patiently, steadily and undaunted, always dreaming of just such an achievement as he has now made, and unmoved by any outside influence that did not help him in his work.

Marconi made his greatest success when he sent just such a faint signal as was flashed across the ocean from one side of a room in his father's house to the other. His success then did not disturb his even calm and that is why the present accomplishment has not changed him.

It requires some strength of character to withstand the adulation which is being heaped upon this young man of 27, but he has already been put to a severe test along this line. Among his friends two Kings are proud to be numbered, Edward of England and Victor Emmanuel of Italy, both of whom are indebted to the inventor for favors.

When Edward was Prince of Wales, Marconi installed his system of wireless telegraphy on the royal yacht and sent daily bulletins to the Queen during the illness of the Prince. Three years ago the young Italian gave the use of his system to his fatherland.

From Edward he received a royal patronage, and from Victor Emmanuel the title of Chevalier in the Order of the Crown.

One day, before the Queen's death, Marconi received a telegram requesting his presence at Windsor. The post office people who received and delivered the message were in a state of great excitement; they were quite paralyzed when Marconi wrote out his reply stating that he could not come that afternoon, but would arrive the following morning.

Those who know him best were not surprised at the news of what the world regards as his greatest success, but only those who were closest to him understood what the accomplishment of transoceanic telegraphy meant to him. Over a year ago he became engaged to an American girl, Miss Josephine B. Holman, and when an intimate friend asked him when he expected to get married he replied:

"Not until I have done the big thing."

The "big thing" was the electric bridging of the Atlantic, and now that he has shown that it can be done, it is not all unlikely that the wedding will occur next spring. Miss Holman is an Indianapolis girl who has lived for nearly two years in New York city and the story of Marconi's wooing is interesting.

The two young people met on the St. Paul in October, 1899, on the way to England and the acquaintance ripened into friendship before the girl returned to New York that winter. After that, Marconi's zeal to carry out his transatlantic plans increased tremendously and a year ago last summer he found it possible to take a vacation in the Adirondacks, where Miss Holman was then staying.

Naturally enough, Marconi likes the praise of men, but he says it has been their adverse criticism which spurred him on through all of his early work.

"In the beginning," he says, "I had the whole scientific world against me, saying and doing everything possible to upset me, but I want to state that I feel very grateful to them for their opposition. Particularly do I wish to thank the leaders who continually opposed me.

"I do not think I would have been half so successful as I have but for them. And when they changed their attitude they helped me, too. It had a good effect upon the public confidence in my work.

"If they had taken no notice of me at all it would have done me more harm than anything else. Their criticism made me anticipate a feeling of future satisfaction when I should have the satisfaction of showing them they were wrong."

For society in general, Marconi cares little. He is constantly refusing invitations. At the Savage Club in London he is seen occasionally, but if his own preferences are carried out he is to be found at one of his stations on the coast of England, miles away from the haunts of men. Here he is practically alone and here it is, out of doors if the weather is favorable, and anything less than a gale is regarded by him as favorable, that all of his important plans are formed and preliminary experiments made.

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But to Marconi must be given the credit of the combination of infinite patience, acute observation, practical skill and an active imagination, which brought about his great triumph. He was the first to send a recorded message through space by electro-magnetic waves, which he accomplished in 1894, the first to telegraph from a ship in motion in 1897, and now the first to send a wireless signal across the Atlantic.

Very few Americans are familiar with the previous attempts to attain trans-Atlantic telegraphy without wires, but as long ago as 1850 two Frenchmen had a plan of sympathetic telegraphy by which they hoped to communicate between Paris and New York. Machines were actually erected in the two cities and thousands of dollars spent in experiments.

A public exhibition was arranged, but before the great day arrived one of the projectors disappeared, and when he was afterward found he was insane. Eight years before this Morse made an attempt to telegraph from Governors Island to Castle Garden without wires, but was unsuccessful. Three years later his assistant succeeded in getting wireless signals across the Susquehanna River where it was nearly a mile wide.

Perhaps one of the most astonishing plans of wireless transatlantic communication was that proposed by J. H. Mower in 1868. At the inconsiderable cost of $10,000 this inventor expected to establish communication between Montauk Point and Oporto, Portugal. His plan was based on the theory that electric currents can be transmitted through water in a straight line.

In 1872 America was again excited over the theory of Loomis, a dentist, who proposed to utilize electricity from the earth and a high stratum of air to communicate from one continent to the other. It was said at the time that the inventor succeeded with the aid of kites in sending and receiving signals from one mountain top to another ten miles away.

Loomis's plan was to erect a very tall tower surmounted by a very tall mast on the very tallest peak of the Rocky Mountains. A similar structure was to be built on the highest peak of the Alps. With this apparatus the dentist expected to reach a stratum of air loaded with electricity. By simply establishing ground wires from his towers the electric circuit would be complete; presto! fortunes would be made.

No less an authority than Prof. Trowbridge of Harvard University studied the problem of telegraphing across the Atlantic without a cable.

"Powerful dynamo electric machines," he writes, "could be placed in Nova Scotia, having one end of their circuit grounded near them and the other end grounded in Florida, the connecting wire being of great conductivity and carefully insulated throughout. By exploring the coast of France two points on surface lines not at the same potential could be found; and by means of a telephone of low resistance Morse signals sent from Nova Scotia to Florida could be heard in France."

Prof. Trowbridge had evidently counted the cost, for he adds: "Theoretically this is possible, but practically the expenditure of energy would be too enormous."

MIX-UP WITH YELLOW PIRATES.

An Incident of a Houseboat Journey on a Chinese River.

From the San Francisco Chronicle.

C. A. Burckhardt, a sufferer from bullet wounds inflicted by Chinese pirates on the Canton River, is at the Occidental Hotel. He is on his way to Indianapolis, where he has relatives, to undergo surgical treatment for his injuries. Burckhardt, though a young man, has long been a resident of Canton, where he was employed as an inspector and special buyer of silks for a large European house.

In July last he and three companions—M. Spalinger, a Swiss; G. E. Hujigen, a Hollander, and V. Hogg, an Englishman—were bound up the Canton River to Shun Tack in a houseboat owned by Burckhardt. The Canton River houseboat is of peculiar construction. It is much like one of the sternwheel river steamers so familiar on the shallow streams of America, but the wheel, instead of being turned by a steam engine, is operated by a crew of coolies, who stand watches turning a series of cranks arranged after the manner of a treadmill. For this work on Burckhardt's boat a crew of eighteen Chinese was carried. They were in charge of a boatman, who acted as captain of the craft. Besides there were several servants.

All went well until the second night of the journey, when the boat was about thirty miles above Canton and almost opposite San Young Kee. Burckhardt and his guests had retired soon after midnight, when they were awakened by a shot being fired. A bullet passed through the side of the house on the boat and struck Burckhardt in the left foot as he lay in his bunk. An artery was cut and he bled profusely. All four men at once seized their rifles, but by that time bullets were flying about the boat.

"I was fast losing strength from the wound and I tore a strip from a blanket and bound it up as best I could," said Burckhardt, in telling the story of the attack. "Before I had my foot bound a stink pot had been thrown on the roof of the house, and it threatened to set fire to our craft. I climbed up to where it was, but as I reached the place I met the boatman. The fumes from the thing were awful, but we succeeded in extinguishing it. While we were at that work a bullet struck the boatman and he died a few minutes later from the wound. I got down into the cabin, and in a minute or two later I was struck in the right leg. The pirates had boarded our boat and the bullets were coming from all directions. One of the pirates got upon the bow of the boat and threw a bomb that came rolling along the deck, the fuse burning steadily. I picked it up from the floor and hurled it through a window, carrying the glass and the sash with it. Just outside the window it exploded, and the side of the cabin was shattered with the force of the concussion. My two wounds were too much for me and I fell.

"As I lay on the floor one of my companions handed me a revolver and I had the satisfaction of shooting two of the pirates as I lay there, though I was hit by another bullet in the left shoulder. Luckily the last bullet made only a slight flesh wound. Another bullet clipped a piece out of my scalp. My companions did good work with their rifles, and after about half an hour they succeeded in driving our assailants off. Spalinger was shot through the left arm soon after the fight began. The bullet barely missed the bone, but he tied a handkerchief about it and kept in the fight to the last. The Chinese of the crew jumped into the water, and most of them clung to the paddles of the wheel. After the pirates had been driven away they reappeared, and with their help we turned the boat back down the river, and about daylight anchored close to a Chinese gunboat and asked for protection. The crew of the vessel made no effort to pursue the pirates. The bodies of eight of the pirates were found in the river with bullets in them from our rifles. We secured a launch from a Chinese official that day, and in it we got to Canton, though we were ten hours on the journey. There we got the services of a surgeon. I was two months in a hospital there, and then was sent to a hospital at Yokohama, where I remained about two months more."

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As to Fattening Clams.

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IT'S HATS OFF TO GOV. CRANE.

HOME VIEW OF THE CHIEF EXECUTIVE OF THE BAY STATE.

Esteem in Which His Neighbors Hold President Roosevelt's First Choice for the Treasury—His Success as Governor of Massachusetts—Many Charities.

PITTSFIELD, Mass., Dec. 28.—One day last summer a party of New York visitors who were out driving on the Dalton road saw a little man, very business-like in appearance, and apparently very much absorbed in thought, coming toward them on the road. They paid no attention to him, for they were looking at the hills and valleys, and they had no time to waste on the men whom they passed along the highway.

As the man approached them, the driver of the carriage—called a rig up here—drew up his horses and took off his hat. As he did so, he turned to the visitors and said in a voice choking with anger:

"Why don't you take off your hats?"

The New Yorkers were amazed at the outburst. The driver had shown no signs of dementia before and they were at a loss to find the cause of his sudden departure from reason. One of the party asked why they should take off their hats.

"Don't you see that that was Gov. Crane? Murray Crane?" said the driver. "You ought to know enough to take your hats off to him. He's the Governor of the State, and he's the best man in the State, and you'd better have taken your hats off to him."

One of the party said that he was not in the habit of taking his hat off to any man, and he was not particular about Crane. The driver looked at him as though he had found a new kind of serpent. Then he began a talk that lasted an hour, in the course of which he told of the various reasons why the people who live about here take their hats off to Winthrop Murray Crane, the Governor of the Commonwealth, and the leading citizen of Berkshire county.

The recital was too long to be repeated here, but the gist of it was that Winthrop Murray Crane was a man by bowing to whom any man honored himself. That is the way that the man whom President Roosevelt was anxious to have in his Cabinet is regarded here, where he was born and where he has always lived.

It takes a good deal to impress these western Massachusetts folks in that way, for they are a hard headed people and they have been in the habit of looking on themselves as the best of all the superlatively good people in this State. Years ago they hesitated long before they acknowledged that their farms and homes were a part of Massachusetts, and to-day, while they admit that there are some pretty decent folk over Boston way, they still think that no one in all the world can compare in real worth with them and their fellow countrymen.

Murray Crane, as he is called throughout Berkshire, is the biggest man in Berkshire, and has been for a long time. It amazes all the residents of this county that he has not won the public name in the rest of the country that he has in his home.

When they read the other day that he had gone to Washington and that it was several hours before it was known at the capital that he was in town, and that even then there were people who did not know who he was, they felt a great pity for the ignorant ones, and reflected again how good it was to live in Berkshire. It did not take the election of Mr. Crane to the governorship to make him known to the men and women of Berkshire.

They knew what kind of a man he was and they took the election rather as a tribute to him and to them than as a political honor apportioned to the westernmost county of the State. For the people here think that no office honors Murray Crane more than he honors it.

For years the Crane mills have been one of the show places of the county, ranking with Greylock and the annual procession of the authorities of Williams College with the High Sheriff of the county at their head as a popular attraction. In the mills all of the bond and currency paper used by the Federal Government is made by a secret process known only to the members of the Crane family and some of the most trusted of their employees.

Some of the most expert counterfeiters in the country have endeavored to make paper that would resemble the Crane note paper in the manner in which the delicate silk fibre is inserted, but they have never succeeded, and it is said that none of the men to whom the secret has been intrusted has ever been disloyal to the confidence that has been imposed in him.

Murray Crane is one of the most generous and philanthropic of men, but no one would think this, unless he lived there, or had an intimate personal acquaintance with him. His charities have been dispensed throughout this community and through the State and in many cases the recipients have not known whom to thank.

A man who talked vaguely about "representing large interests" has appeared at the door of more than one concern that was about to fail, through no fault of the men who were conducting its business and has tided it over the storm, and then gone away and no one has ever known that the paper maker of Dalton was the man who had saved the concern.

A widow with a small farm, and a disproportionate mortgage has been visited by a man who had in his hand the release for the mortgage, and she has never known that Murray Crane, hearing of her plight, had stepped up to the owner of the mortgage and taken it up, without any man knowing why.

They tell a story of a man who thought that one of the Cranes had done him an injury. The folk here say the man was "always a bit queer" who talked in a way about the coming Governor that caused him to be thrashed several times with great enthusiasm. He finally fell on evil days and needed help. There was only one man to help him and that was Mr. Crane. The help was forthcoming without a question.

No one knows what Mr. Crane has done. He has hidden it in many cases from his closest friends by working through other men.

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